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VI. *Some Experiments concerning the Impregnation of the Seeds of Plants, by James Logan, Esq; Communicated in a Letter from him to Mr. Peter Collinson, F. R. S.*

Philadelphia, Nov. 20, 1735.

S I R,

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AS the Notion of a Male Seed, or the *Farina Fæcundans* in Vegetables is now very common, I shall not trouble you with any Observations concerning it, but such as may have some Tendency to what I have to mention ——— And, first, I find from *Miller's Dictionary*, that *M. Geoffroy*, a Name I think of Repute amongst *Naturalists*, from the Experiments he made on *Mayze*, was of Opinion, that Seeds may grow up to their full Size, and appear perfect to the Eye, without being impregnated by the *Farina*, which possibly, for ought I know, may in some Cases be true ; for there is no End of Varieties in Nature : — But in the Subject he has mention'd I have Reason to believe it's otherwise, and that he applied not all the Care that was requisite in the Management.

When I first met with the Notion of this Male Seed, it was in the Winter Time, when I could
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do no more than think of it; but in the Spring I resolved to make some Experiments on the *Mayze*, or *Indian Corn*. In each Corner of my Garden, which is forty Foot in Breadth, and near eighty in Length, I planted a Hill of that Corn, and watching the Plants when they grew up to a proper Height, and were pushing out both the Tassels above, and Ears below; from one of those Hills, I cut off the whole Tassels, on others I carefully open'd the Ends of the Ears, and from some of them I cut or pinch'd off all the silken Filaments; from others I took about half, from others one fourth and three fourths, &c. with some Variety, noting the Heads, and the Quantity taken from each: Other Heads again I tied up at their Ends, just before the Silk was putting out, with fine Muslin, but the Fuzziest or most Nappy I could find, to prevent the Passage of the *Farina*; but that would obstruct neither Sun, Air or Rain. I fastened it also so very loosely, as not to give the least Check to Vegetation.

The Consequence of all which was this, that of the five or six Ears on the first Hill, from which I had taken all the Tassels, from whence proceeds the *Farina*, there was only one that had so much as a single Grain in it, and that in about four hundred and eighty Cells, had but about twenty or twenty-one Grains; the Heads, or Ears, as they stood on the Plant, look'd as well to the Eye as any other; they were of their proper Length, the Cores of their full Size, but to the Touch, for want of the Grain, they felt light and yielding. On the Core, when divested of the
Leaves

Leaves that cover it, the Beds of Seed were in their Ranges, with only a dry Skin on each.

In the Ears of the other Hills, from which I had taken all the Silk, and in those that I had cover'd with Muslin, there was not so much as one mature grown Grain, nor other than as I have mentioned in the first : But in all the others, in which I had left Part, and taken Part of the Silk, there was in each the exact Proportion of full Grains, according to the Quantity or Number of the Filaments I had left on them. And for the few Grains I found on one Head in the first Hill, I immediately accounted thus : That Head, or Ear, was very large, and stood prominent from the Plant, pointing with its Silk Westward directly towards the next Hill of *Indian* Corn ; and the *Farina*, I know, when very ripe, on shaking the Stalk, will fly off in the finest Dust, somewhat like Smoak. I therefore, with good Reason, judg'd that a Westerly Wind had waisted some few of these Particles from the other Hill, which had light on the Stiles of this Ear, in a Situation perfectly well fitted to receive them, which none of the other Ears, on the same Hill, had. And indeed I admire that there were not more of the same Ear than I found impregnated in the same manner.

As I was very exact in this Experiment, and curious enough in my Observations, and this, as I have related it, is truly Fact, I think it may reasonably be allowed, that notwithstanding what M. *Geoffroy* may have deliver'd of his Trials on the same Plant, I am positive, by my Experiment

ment on those Heads, That the Silk was taken quite away, and those that were cover'd with Muslin, none of the Grains will grow up to their Size, when prevented of receiving the *Farina* to impregnate them, but appear, when the Ears of Corn are disclosed, with all the Beds of the Seeds, or Grains, in their Ranges, with only a dry Skin on each, about the same Size as when the little tender Ears appear fill'd with milky Juice before it puts out its Silk. But the few Grains that were grown on the single Ear, were as full and as fair as any I had seen, the Places of all the rest had only dry empty Pellicles, as I have described them ; and I much question whether the same does not hold generally in the whole Course of Vegetation, though, agreeable to what I first hinted, it may not be safe to pronounce absolutely upon it, without a great Variety of Experiments on different Subjects. But I believe there are few Plants that will afford so fine an Opportunity of observing on them as the *Mayze*, or our *Indian Corn* ; because its Stiles may be taken off or left on the Ear, in any Proportion, and the Grains be afterwards number'd in the Manner I have mentioned.